



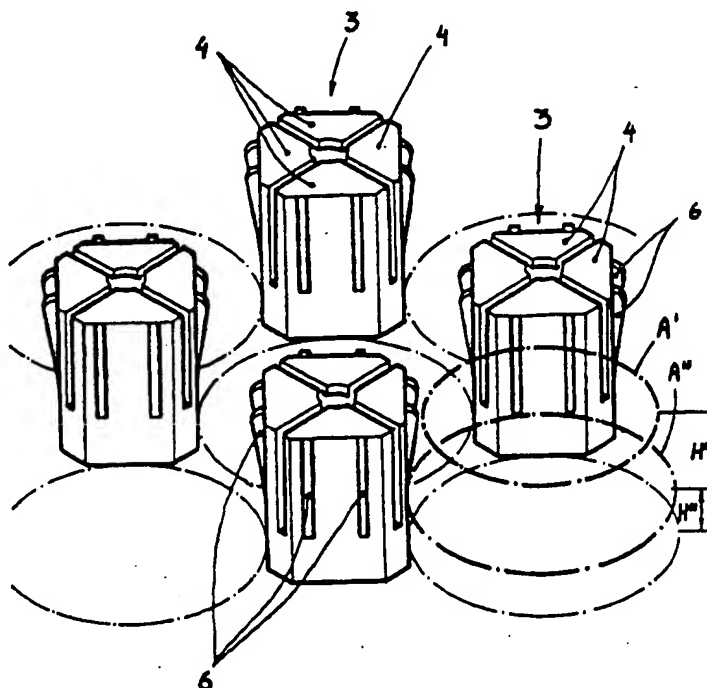
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(21) International Application Number: PCT/SE97/01211 (22) International Filing Date: 4 July 1997 (04.07.97) (30) Priority Data: 9603020-0 21 August 1996 (21.08.96) SE (71) Applicant (for all designated States except US): PERSTORP AB (SE/SE); S-284 80 Perstorp (SE). (72) Inventor; and (75) Inventor/Applicant (for US only): KRISTOFFERSSON, Karl-Gustaf (SE/SE); Ekliden 9, S-286 36 Örkelljunga (SE). (74) Agent: STENBERG, Yngve; Perstorp AB, S-284 80 Perstorp (SE).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published With international search report.

(54) Title: TRAY FOR BOTTLES

(57) Abstract

Tray (1) for bottles (10) of polymeric material. The upper side of the tray (1) is provided with a number of receiving means (2) for the reception of the lower parts of the bottles (10). A number of parting and orienting tower-like protrusions (3) are placed between the receiving means (2). The protrusions (3) are provided with a number of resilient legs (4) forming an integrated part of the tray (1). The legs (4) extend upwards forming the sides of the protrusions (3). The legs (4) are provided with mainly vertical ribs (6) directed mainly towards the centre of the bottles (10). The legs (4) are pressing towards the lower parts of the bottles (10) so that the bottles (10) will be held in position during transport.



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Tray for bottles

The present invention relates to a tray for bottles.

Transport packages such as crates for one-way or returnable bottles are quite common nowadays. These are usually designed so that they protect the bottles from thrusts and strikes since the bottles most often have been manufactured of glass. One advantage with these types of packages is that they have a very good stability towards the swaying that such packages will be exposed to during transport. One disadvantage is that these packages are very volume demanding during transport and storage when empty.

One type of bottle that has become more common during the recent years is the one-way and returnable bottle made from polymeric materials. These bottles are not nearly as sensitive to thrusts and strikes as glass bottles and do therefore not need a protecting package. They can also be used for carrying the load of packages placed above since they are insensitive to thrusts, whereby the height of the package can be made lower than the height of the bottle.

This type of transport packages, normally called trays, will give considerable advantages when transported and stored empty, since the height of the tray can be made considerably lower than bottle crates. Trays do further allow a somewhat higher amount of bottles per area unit than the bottle crate. The amount of material needed per carried bottle for the manufacturing of a bottle tray is also considerably lower than the corresponding amount of material in a bottle crate.

A disadvantage with bottle trays is however the relatively poor stability towards swaying of a stack of such trays containing bottles. A stack of trays containing bottles can easily overturn as each individual bottle tilts at strong braking or at high corner speeds. This might cause hundreds of bottles to fall to the ground. This might be solved by providing the tray with upwards or downwards directed supports which would enhance the stability. This would however cause the tray to be more volume demanding when transported and stored empty. Thereby a good quality would be lost. The stability can also be increased by securing the stack with stretch foil, tensional strapping or other similar load-securing devices. This would however cause an unwanted increase in material used. The time consumed when stacking and de-stacking the bottles and the trays would also increase. Additionally the amount of unwanted waste is increased.

Yet another disadvantage with bottle trays is that bottles in the tray can bounce out of the top tray during shaky transports. It can also in certain cases be desirable that labels of the bottles are directed in the same direction for the best presentation of the goods. This is however impossible at the existing

types of trays since even very small vibrations will bring the bottles to rotate randomly.

It has, according to the present invention, been possible to solve the problems and drawbacks and a bottle tray where the bottles stand firmly has been achieved. The invention relates to a tray for bottles, preferably different types of re-usable and one-way bottles of polymeric material such as polyvinylchloride and polyalkyleneterephthalates. The bottles are provided with a bottom member and a side member. The upper side of the tray is provided with a number of receiving means for the reception of the lower parts of the bottles. A number of parting and orienting tower-like protrusions are placed between the receiving means. The invention is characterised in that the protrusions are provided with a number of resilient legs forming an integrated part of the tray by being connected to the tray or the protrusions via a leg base. The legs extend upwards forming the sides of the protrusions. The legs are further provided with mainly vertical ribs directed mainly towards the centre of the bottles. The legs are pressing towards the lower parts of the bottles so that the bottles will be held in position. It is hereby prevented that the bottles rotate, or that they bounce out of the tray during transport. All receiving means in the tray are preferably provided with legs with ribs placed at the protrusions.

The ribs placed on the legs are preferably provided with an undercut so that a circle A' touching the ribs placed around a receiving means at a height H' above the upper bottom surface of the tray is smaller than a circle A'' touching the same ribs at a lower height H'' above the upper bottom surface of the tray.

The tray is preferably manufactured through injection moulding of a thermoplastic material such as polyethylene, polypropylene, polybutene, polyamide, acrylonitrile-butadiene-styrenecopolymer, polyvinylchloride or the like.

The invention is explained further together with the enclosed drawings showing two embodiments of the invention wherein,

- figure 1 shows schematically a part of a tray for bottles.
- figure 2 shows schematically a second embodiment of a tray.
- figure 3 shows schematically and in cross-section a receiving means.
- figure 4 shows different embodiments of existing bottles.

Figure 1 shows schematically a part of a tray 1 for one-way and returnable bottles 10 made from polymeric material. The upper side of the tray 1 is provided with a number of receiving means 2 for the reception of the lower parts of the bottles 10. A number of separating and orienting tower-like protrusions 3 are placed between the receiving means 2. The protrusions 3 are provided with a number of resilient legs 4 which press towards the lower parts of the bottles 10 so that the bottles 10 are held in position. Rotation and bouncing of the bottles 10 in the tray 1 during transport are hereby prevented.

Figure 2 shows schematically a part of a second embodiment of a tray 1 with receiving means 2 between which a number of separating and orienting protrusions 3 are placed. The protrusions 3 are provided with a number of resilient legs 4 which are connected to the protrusions 3 via a leg base 5. The legs 4 extend upwards along the sides of the protrusions 3. The legs 4 are further provided with vertical ribs 6 directed towards the centre of the bottles 10. The ribs 6 placed on the legs 4 are provided with an undercut so that a circle A' touching the ribs 6, placed around a receiving means 2, at a height H' above the upper bottom surface of the tray 1 is smaller than a circle A'' touching the same ribs 6 at a lower height H'' above the upper bottom surface of the tray 1.

Figure 3 shows schematically a receiving means 2 with surrounding protrusions 3 in cross-section. The protrusions are provided with a number of resilient legs 4 which are connected to the protrusions 3 via a leg base 5. The legs extend upwards along the sides of the protrusions 3. The legs 4 are further provided with vertical ribs 6 directed towards the centre of the bottles 10.

Figure 4 shows different existing types of re-usable and one-way bottles 10 of polymeric material. The bottles are provided with a bottom member 12 and a side member 13. Bottles with a protruding bottom member 12 are most suitable for use together with the invention since a snap-lock is achieved. However also bottles 10 without such a protruding bottom member 12 can advantageously be used together with the invention.

The invention is not limited to the embodiments shown since they can be varied within the scope of the invention. The legs can, per example in their free end be provided with a bellow-like spring. A greater holding force is hereby achieved.

Claims

1. Tray (1) for bottles (10), preferably different types of re-usable and one-way bottles of polymeric material such as polyvinylchloride and polyalkylene-terephthalates wherein the bottles (10) are provided with a bottom member (12) and a side member (13), the upper side of the tray (1) is provided with a number of receiving means (2) for the reception of the lower parts of the bottles (10), and a number of parting and orienting tower-like protrusions (3) are placed between the receiving means (2), characterised in that the protrusions (3) are provided with a number of resilient legs (4) forming an integrated part of the tray (1) by being connected to the tray (1) or the protrusions (3) via a leg base (5) wherein the legs (4) extend upwards forming the sides of the protrusions (3), that the legs (4) are provided with mainly vertical ribs (6) directed mainly towards the centre of the bottles (10) and that the legs (4) are pressing towards the lower parts of the bottles (10) so that the bottles (10) will be held in position whereby it is prevented that the bottles (10) rotate, or that they (10) bounce out of the tray (1) during transport.
2. Tray (1) according to claim 1 characterised in that the ribs (6) placed on the legs (4) are provided with an undercut so that a circle A' touching the ribs (6) placed around a receiving means (2) at a height H' above the upper bottom surface of the tray (1) is smaller than a circle A'' touching the same ribs (6) at a lower height H'' above the upper bottom surface of the tray (1).
3. Tray (1) according to claim 1 or 2 characterised in that all receiving means (2) in the tray (1) are provided with legs (4) with ribs (6) placed at the protrusions (3).
4. Tray (1) according to any of the claims 1 - 3 characterised in that the tray is manufactured through injection moulding of a thermoplastic material such as polyethylene, polypropylene, polybutene, polyamide, acrylonitrile-butadiene-styrenecopolymer, polyvinylchloride or the like.

Fig. 1

1/3

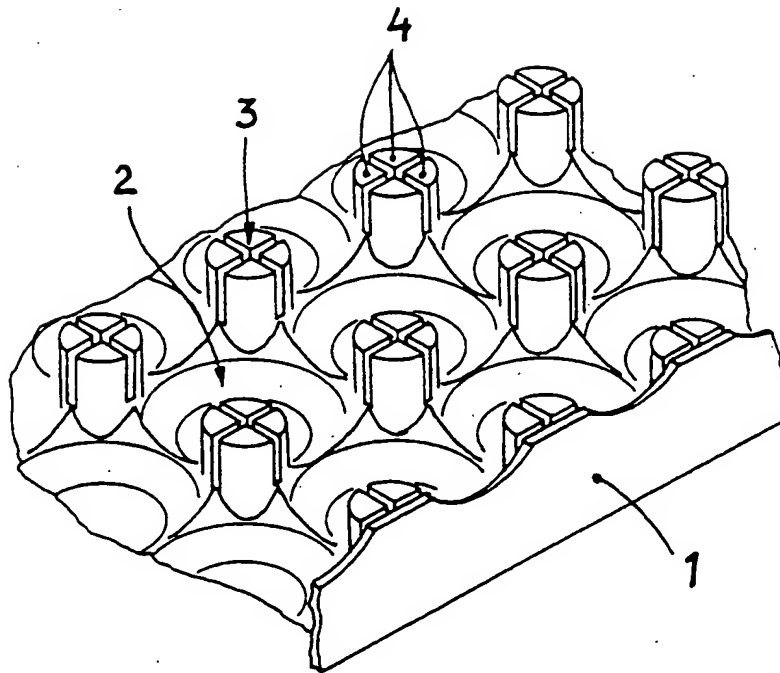


Fig. 2.

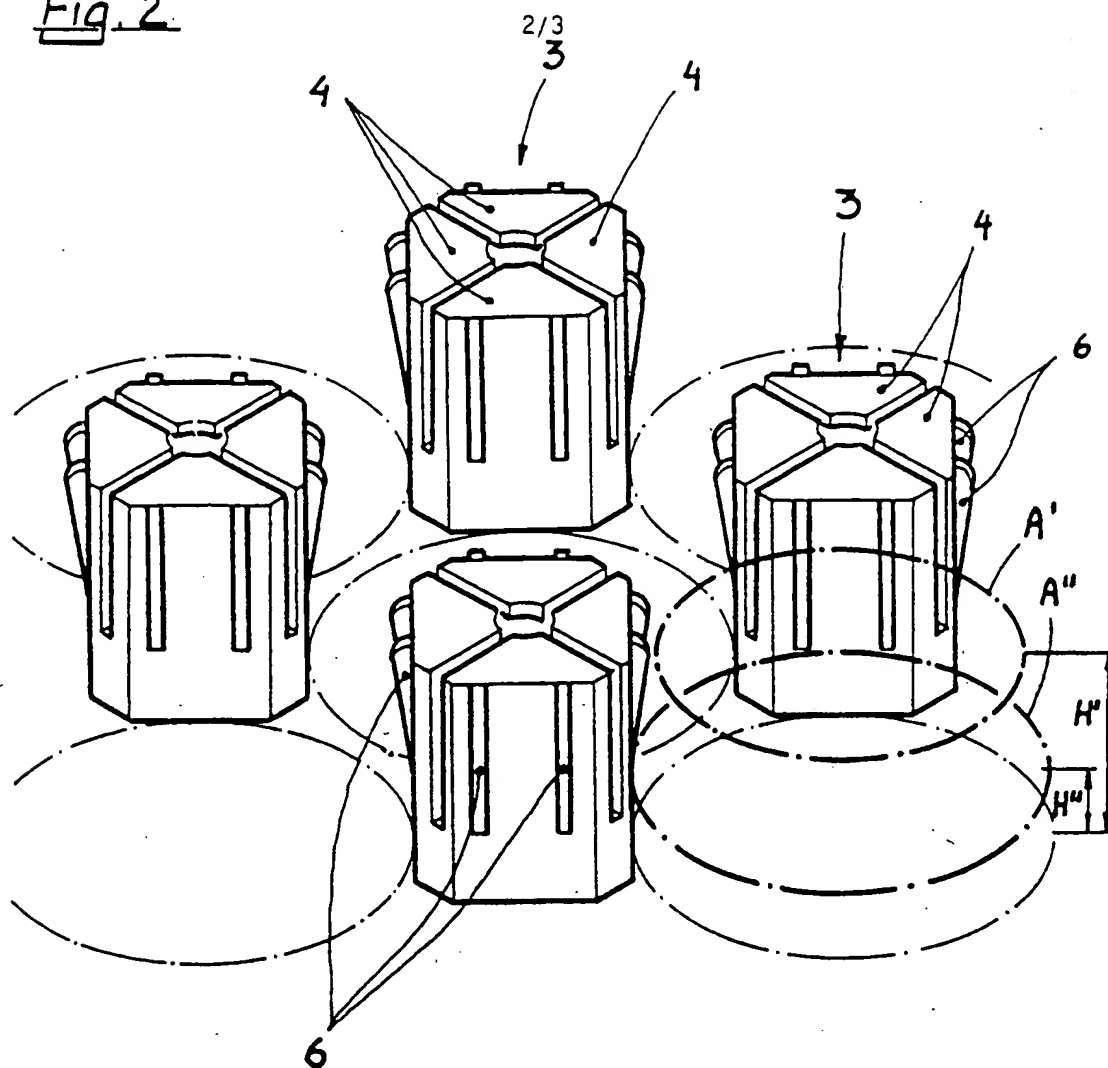
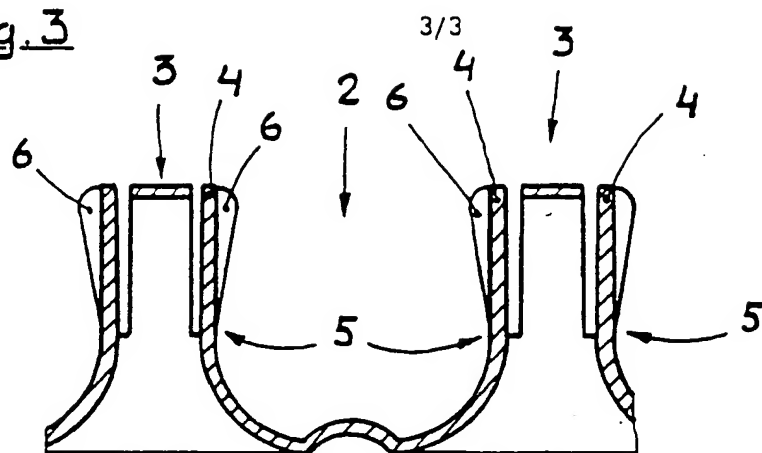
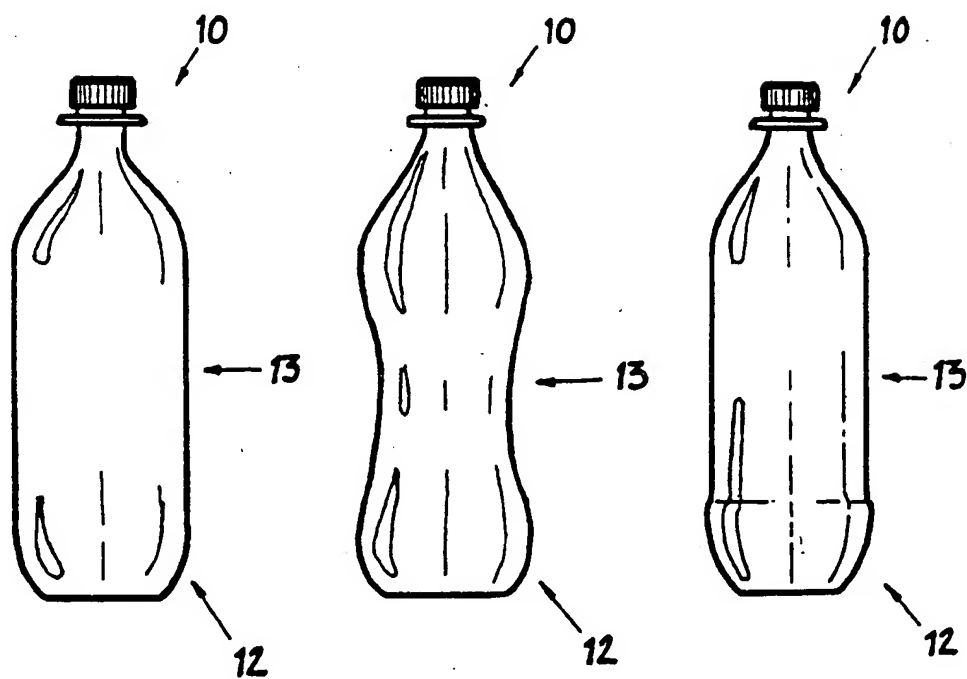


Fig. 3Fig. 4

INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER		
IPC6: B65D 71/00, B65D 21/02 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5263605 A (CATON), 23 November 1993 (23.11.93), figures 8,9, abstract --	1-4
A	EP 0099827 A1 (SAINT-GOBAIN EMBALLAGE), 1 February 1984 (01.02.84), figures 2,3, abstract --	1
A	WO 9612657 A1 (DYNOPLAST A/S), 2 May 1996 (02.05.96), abstract --	1
A	WO 9407758 A1 (DYNOPLAST AS), 14 April 1994 (14.04.94), abstract -- -----	1
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